DOCUMENT RESUME

ED 246 303 CE 039 366

AUTHOR Lengert, Gerald
TITLE Drywall Finishing Apprenticeship. Course Outline (C-6).
INSTITUTION British Columbia Dept. of Education, Victoria.
PUB DATE 81
NOTE 126p.; For a related manual, see CE 039 365. Developed for the British Columbia Ministry of Labour with the assistance of the Drywall Finishing Trade Advisory Committee.
AVAILABLE FROM Publication Services Branch, Ministry of Education, 878 Viewfield Road, Victoria, BC V9A 4V1 ($6.00).
PUB TYPE Guides - Classroom Use - Guides (For Teachers) (052) -- Guides - Classroom Use - Materials (For Learner) (051)

EDRS PRICE MF01 Plus Postage. PC Not Available from EDRS.
DESCRIPTORS *Apprenticeships; Behavioral Objectives; Buildings; Building Trades; Carpentry; Ceilings; Competence; Competency Based Education; *Construction (Process); Construction Costs; Construction Industry; *Construction Materials; Course Content; Course Descriptions; Foreign Countries; *Job Skills; Lesson Plans; Postsecondary Education; Safety; State Curriculum Guides; *Structural Elements (Construction); Systems Building; Task Analysis; Trade and Industrial Education; Units of Study; Vocational Education
IDENTIFIERS British Columbia; *Drywall Construction

ABSTRACT

This course outline was prepard to help apprentice drywall installers and teachers of drywall finishing courses to learn or teach the skills necessary for the apprenticeship course in British Columbia. The course outline consists of 11 tracks (units) that cover the following topics: estimating, job inspection, safety, applying bead, filling compounds, taping, filling, texturing, making repairs and corrections, maintaining equipment, and job economics. Each unit consists of 3 to 12 skills outlines. The page format for the skills outlines has a statement of the skill at the top, followed by the performance objective, and a list of procedures. The procedures detail the steps and knowledge needed to carry out the objective. Opposite each procedure are criteria that give the acceptable standard for how well the procedure is to be done. The outline can be used by students as a guide to accepted standards and by teachers as a lesson plan. A drywall finishing skill profile chart is included. (KC)

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DRYWALL FINISHING Apprenticeship

Course Outline

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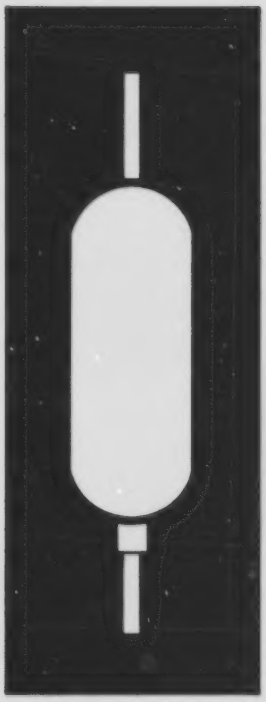

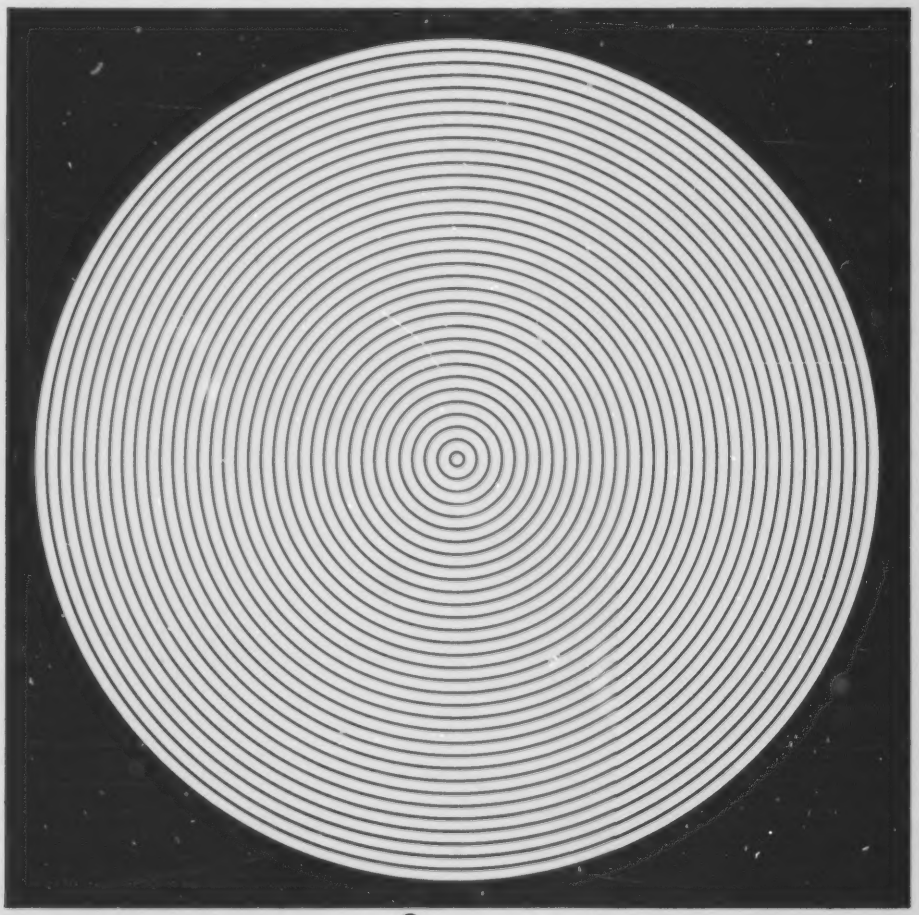

CE039366

DRYWALL FINISHING Apprenticeship

Course Outline (C-6)

Province of
British Columbia

Developed by the
Ministry of Education
on behalf of the
Ministry of Labour
1981

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To obtain copies contact:
Publication Services Branch
Ministry of Education
878 Viewfield Road
Victoria, B.C. V9A 4V1
Tel. 387-5331

For information regarding this program contact:
Coordinator of Construction Programs
Post-Secondary Department
Ministry of Education
7451 Elmbridge Way
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INTRODUCTION

The Drywall Finishing Apprenticeship Course Outline is produced using the DACUM process, a systematic model for developing career, technical, and vocational training programs.

The first step in the process is to hold a DACUM Workshop. The Drywall Finishing DACUM workshop was held in June, 1976, and was attended by drywall finishing journeymen, representatives of the Drywall Finishing Joint Board and the Carpentry Apprenticeship Joint Board of B.C., and employers. Participants for a workshop are selected who have a realistic understanding of the day-to-day activities carried out on the job and are familiar with new technology in the field. The product of a DACUM Workshop is a Skill Profile Chart; it lists the essential skills needed by a person to do a job, in this case, the job done by journeymen drywall finishers.

Once a skill profile chart is approved, the next step in the DACUM process is to write a Course Outline. For each skill on the chart (or more realistically, for each skill on the chart possible to teach in a training program) a Performance Objective is devised, that is, a task that the trainee or apprentice must perform, and perform to certain standards, to demonstrate having the skill. When trainees can satisfactorily do all the performance objectives in the course outline, then they are considered to have the skills required to complete the training program.

The page format for the Drywall Finishing Course Outline has a statement of the skill at the top, under it the performance objective, and then a list of Procedures. The procedures detail the steps and knowledge needed to carry out the objective; they are, in other words, the parts while the objective is the whole. Opposite each procedure are Criteria which give the acceptable standard for how well the procedure is to be done.

This course outline can be used by both students and instructors. Students will find it helpful in directing their studies and practice, and as a guide to accepted standards. Instructors can use the outline as a lesson plan. Some modifications to the performance objectives may be necessary because of training program restrictions such as money, space and equipment. However, any modifications should retain the intent of the original objective and have criteria of equal standards.

FORWARD

The Drywall Finishing Apprenticeship Course Outline is issued by the Ministry of Labour for apprenticeship training classes. Apprentices attend these classes in accordance with the regulations of the Apprenticeship and Training Development Act. The outline was prepared by Gerald Lengert, a drywall finishing instructor at Pacific Vocational Institute. Mr. Lengert was advised and assisted by the Drywall Finishing Trade Advisory Committee, a body which consists of representatives from both labour and management, and the outline has been approved by the committee.

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TRACK I
ESTIMATING

SKILL I: INTERPRET PLOT PLAN DRAWINGS

PERFORMANCE OBJECTIVE: The apprentice will correctly determine the location of the worksite given a plot pian.

PROCEDURES	CRITERIA
Differentiate between plot plan and plan drawings.	1. The plot plan shows location of building on a lot and the legal description of land. 2. The plan drawing shows the horizontal cross section of a building, giving the layout of the floor, joists, rafters, etc.
Locate a specific building and unit by using directional symbols on plan.	1. Use the indicating arrow to determine the points of the compass. 2. Find a designated building by using letter, number or name of building. 3. Relate a unit to the nearest visible landmarks (e.g. entrances, trees, excavations, other buildings).

TRACK I

ESTIMATING

SKILL 2: INTERPRET PLAN DRAWINGS

PERFORMANCE OBJECTIVE: The apprentice will interpret floor plan drawings to extract specific information about drywall and related trades to standard of the criteria defined below.

PROCEDURES	CRITERIA
From a given floor plan, establish inside dimensions of a room by reading or by calculation.	Must indicate all the following: 1. Dimensioning lines. 2. Units of measurement. 3. Missing dimensions as scaled or calculated. 4. Interior dimensions for each room are recorded.
Identify and name materials, fixtures and equipment from symbols on floor plan.	Must indicate all the following: 1. Standard architectural methods are identified and named using local construction names. 2. Openings are located and identified as doors, windows, arches or access panels. 3. Doors are identified as swinging, sliding or folding. 4. Drops and stub walls are located and identified. 5. Major appliances, cabinets and plumbing fixtures are located and identified.

.../Cont'd.

SKILL 2: INTERPRET PLAN DRAWINGS (Cont'd)

PROCEDURES	CRITERIA
Identify location of all drywall trims from drawings.	Must indicate all the following: 1. 2400 mm exterior corners. 2. Drops. 3. Corners where drywall meets other wall surfaces. 4. Shower stalls. 5. Stairs. 6. Windows, doors and other openings.
Locate all installations related to other trades (plumbing, heating, electrical, insulation).	Must indicate all the following: 1. Electrical outlets - 110 & 220 V, switches, light fixtures (incandescent, fluorescent). 2. Heating ducts and cold-air returns. 3. Insulation. 4. Rough plumbing. 5. Telephone. 6. Doorbell. 7. Cable T.V.

TRACK I
ESTIMATING

SKILL 3: INTERPRET ELEVATION DRAWINGS

PERFORMANCE OBJECTIVE: The apprentice will read elevation drawings to determine the design, floor levels, and exterior features of a building.

PROCEDURES	CRITERIA
Identify architects symbols and name the materials they represent.	1. Symbols will be identified and named with construction material names with 70% accuracy.
Determine floor levels and their relationship to other levels and to grade.	1. All dimensions to be read, calculated or scaled with 100% accuracy. 2. Floor levels to be indicated by their relative position to the ground level floor.
Identify type of construction.	Building must be indicated as one of each of the following: 1. Single family unit, multiple family dwelling or commercial. 2. Slab, crawl space, basement, split level. 3. Wood frame, steel stud, concrete, cement block.
Identify types of windows and location in wall.	1. Must be identified as one of the following: double-hung, horizontal sliding, casement, awning, fixed sash. 2. Size of window and location in wall determined with 100% accuracy.
Identify types of doors.	1. Must be identified as one of the following: flush or panel, with or without lites. 2. Door schedule must be consulted for further information regarding dimension, left hand or right hand, and method of opening.

TRACK I

ESTIMATING

SKILL 4: INTERPRET DETAIL AND SECTION DRAWINGS

PERFORMANCE OBJECTIVE: Using referencing procedures, the apprentice will locate detail and section drawings in a set of working drawings, and extract specific information regarding framing materials, trim materials.

PROCEDURES	CRITERIA
Identify reference procedures.	1. Cutting lines indicate what section drawing will show. 2. Architect may use symbol with letters and numbers. 3. Abbreviations may be used, to refer to specs. 4. All pages of a set of working drawings are numbered for easy reference.
Describe texture, pattern and trim of a given wall from detail drawing.	Must be indicated as one of following: 1. Machine or hand applied. 2. Free hand or specific pattern. 3. Hard, soft, self-priming material.
Describe framing material and type of wallboard and trims used, from a section drawing.	Must include the following information: 1. - steel or wood stud - bearing or non-bearing wall - fire-rated or regular wallboard - thickness of wallboard - laminations or single ply - corner bead or edge trim - insulated or non insulated - sound rated or non sound rated.

SKILL 5: INTERPRET FINISH SCHEDULE

PERFORMANCE OBJECTIVE: The apprentice will locate and correctly identify the final decoration of all walls to be worked on.

PROCEDURES	CRITERIA
Locate finish schedule.	1. Finish schedule is either a page of the drawings, or a separate publication. 2. Finish schedule is found at one of the following: - on site in general contractor's office - drywall contractor's office, foreman or supervisor - architect's office.
Match names of rooms on finish schedule to locations on blueprints.	Must locate and identify all of the following: - vestibule - family room - ensuite - garage - carport - nook .. etc.

.../Cont'd.

SKILL 5: INTERPRET FINISH SCHEDULE (Cont'd.)

PROCEDURES	CRITERIA
Identity paint finishes, wall coverings and textures from finish schedule.	Must be identified as one of the following: 1. Paint: flat, semi-glcss, high-gloss. 2. Wallcoverings: fabric, foil, paper, vinyl, wall panelling. 3. Texture: - sprayed: orange peel, splatter, knock down, rough, self-priming. - hand applied: trowel, broom, stipple.

SKILL 6: INTERPRET ARCHITECT'S SPECIFICATIONS

PERFORMANCE OBJECTIVE: The apprentice will determine the required material and any work restrictions from architect's specifications.

PROCEDURES	CRITERIA
Given a set of specs. state headings and page numbers for drywall information.	1. Must locate all information pertaining to drywall installation and finishing.
Identify discrepancies between written specs. and National Building Code.	1. Written specs. must conform to National Building Code Regulations.
Identify types of information found in general specs.	1. Legal liabilities, bonding, subtrades, work responsibilities, etc.
Identify other specifications that effect drywall finishing.	Must indicate all of the following: 1. C.M.H.C. 2. Local municipal standards. 3. Master Painters Association. 4. B.C. Wall and Ceiling Standards.

SKILL 7: CALCULATE MATERIALS

PERFORMANCE OBJECTIVE: The apprentice will calculate and itemize wallboard types and sizes, trim and finishing materials by rules of thumb.

PROCEDURES	CRITERIA
Make up order sheet.	1. All lengths of wallboard are clearly noted.
Measure walls for common board lengths.	1. 2400, 3000, 3600 mm lengths used to minimize number of joints. 2. Thicknesses of 12.7 or 15.5 mm specified.
Determine placement of joints.	1. No joints above or below openings; if joint is necessary, should be 30 cm from corner of opening. 2. Butt joints located at ends of walls when possible. 3. Walls less than 1200 mm long should have no joints.
Calculate area of walls and ceilings using rules of thumb.	Area calculated using following formulas: 1. Level entry: floor area x 3.5. 2. Cathedral entry: floor area x 4.
Calculate area of walls and ceilings using board count.	1. Total number of boards of same length x length x 4. 2. Add up total areas of 2400, 3000 and 3600 mm lengths.

.../Cont'd

SKILL 7: CALCULATE MATERIALS (Cont'd)

PROCEDURES	CRITERIA
Measure and categorize trims to nearest manufactured length.	Trims to be listed as follows: 1. Corner bead, metal, paper, screen, veneer: 2100, 2400, 3000 mm. 2. L edge trim: 2100, 2400, 3000 mm. 3. J edge trim: 2100, 2400, 3000 mm. 4. Plastic J-trim: 3000 mm.
Calculate finishing materials by rules of thumb.	1. 2 bags of taping filler per 100 m^2. 2. 1 bag of topping filler per 100 m^2. 3. 110 m of tape per 100 m^2. 4. 1 box of premix taping filler per 100 m^2. 5. 1 box of premix topping filler per 100 m^2. 6. 2 bags or 1 box of premix per 30 m of bead. 7. 5 L of paint per 30 m^2. 8. soft textures - 1 bag per 25 m^2. 9. hard textures - 1 bag per 40 m^2.

Track 2
Job Inspection

TRACK 2

JOB INSPECTION

SKILL 1: DETERMINE FINISH REQUIREMENTS

PERFORMANCE OBJECTIVE: From the finish schedule, the apprentice will determine the characteristics of decorative materials and the amount of finishing required.

PROCEDURES	CRITERIA
Determine characteristics of the final decorative materials as described in finish schedule.	Must identify all of the following: 1. Thickness of material (e.g. paint, wallpaper, etc.). 2. Colour of material (e.g. light or dark). 3. Texture of material (smooth, rough or high reflectance).
State "rules of thumb" to determine finishing work required before application of final decoration.	Must identify all of the following: 1. The thinner the decoration material, the flatter and more blemish free the finished wall must be. 2. The lighter the colour, the flatter and more blemish free the finished wall must be. 3. The finer the texture, the flatter and more blemish free the finished wall must be. 4. Any time adhesive is applied over the finish the surface should be dust free (e.g. wall tile adhesive).

TRACK 2

JOB INSPECTION

SKILL 2: DETERMINE EQUIPMENT REQUIRED

PERFORMANCE OBJECTIVE: The apprentice will determine suitable machinery and equipment required to complete a given job safely and efficiently.

PROCEDURES	CRITERIA
Choose a method of taping.	1. Drytaping is slow but requires few tools - and is efficient in areas that are hard to get at. 2. Hopper method is faster than drytaping but work must be split into tops and bottoms. 3. Machine allows all work to be done from the floor thus speeding up taping process.
Choose method of elevating work surface.	1. Stilts are safe up to 600 mm. 2. Baker-type scaffolds good up to 2 m. 3. Rolling tower can be jointed for heights above 2 m. 4. Saw horses and planks can be used but time is spent moving and setting up. 5. Ladders can be used if a small area at height over 2.4 m is to be reached.
Determine method of texturing and undercoating.	1. Hand-held hopper good for areas under 300 m^2. 2. Hand-held hopper best for orange-peel and splatter type finish. 3. Roto-stator pump best for aggregate type textures over 300 m^2. 4. Paint roller best for 300 m^2 and under. 5. Airless paint machine good for areas over 300 m^2.

.../Cont'd.

SKILL 2: DETERMINE EQUIPMENT REQUIRED (Cont'd).

PROCEDURES	CRITERIA
Determine method of filling.	1. Machines speed up work by 50% over handwork. 2. Hand filling best for scaffold work and small areas.

TRACK 2

JOB INSPECTION

SKILL 3: STORE MATERIAL

PERFORMANCE OBJECTIVE: The apprentice will store fillers, beads and mouldings in an area where they are protected from damage.

PROCEDURES	CRITERIA
Identify care to be taken with bags and boxes of filler.	1. Bags of filler and wallboard should be raised from concrete floor. 2. Away from high traffic areas. 3. As near as possible to where they will be used. 4. Away from damp areas. 5. Pre-mix fillers should not be frozen.
Store mouldings and beads.	1. Beads should be stored horizontal in dry area away from traffic areas and in original containers when possible.
Store filler after it is mixed.	1. Pails of mixed fillers should be washed down and covered with 2 to 3 cm of water to prevent drying out overnight. 2. Fast sets should never be left in a pail overnight.

TRACK 2

JOB INSPECTION

SKILL 4: CHECK TEMPERATURE AND HUMIDITY

PERFORMANCE OBJECTIVE: The apprentice will check that the temperature and humidity is suitable for working using instruments and rule of thumb methods.

PROCEDURES	CRITERIA
Determine room temperature.	1. To nearest degree Celsius using thermometer.
Determine relative humidity of air in room.	1. To nearest percent using sling psychrometer.
Determine moisture content of wood and gypsum wallboard.	1. To nearest percent using wood moisture meter or one calibrated for gypsum wallboard.
Identify the minimum requirements of temperature and humidity either by instrument or rule of thumb.	1. Minimum temperature: 12°C. Maximum moisture content of board: 14%. 2. Rule of thumb for unacceptable temperature and moisture conditions: - board feels damp and cold - surface paper is soft - you can see your breath - water standing on floors of building.

TRACK 2

JOB INSPECTION

SKILL 5: CREATE PROPER DRYING CONDITIONS

PERFORMANCE OBJECTIVE: The apprentice will create and maintain proper drying conditions according to the manufacturer's recommendations so that filler will dry in 24 h.

PROCEDURES	CRITERIA
Create and maintain proper temperature, using thermostatically controlled heating system.	1. Minimum temperature for slow setting materials 13°C. 2. Minimum temperature for fast setting materials 7°C.
Create and maintain proper humidity.	1. Minimum relative humidity 30%. (See Drying Chart). 2. Water spread on floor to increase relative humidity if below 30%. 3. Heat and ventilation decrease relative humidity when greater than 30%.
Create and maintain proper ventilation.	1. 2 openings required to ventilate building. 2. Size of opening relative to size of area to be ventilated. 3. Cold air returns for forced air heating must be open for circulation.
Create proper moisture content of wallboard.	1. Recommended maximum moisture content of wallboard is 14%. 2. Heat and ventilation will decrease moisture content of wallboard. 3. High humidity and low temperature and poor ventilation increase moisture content of wallboard.

TRACK 2

JOB INSPECTION

SKILL 6: RECOGNIZE PROPERLY PREPARED SURFACES

PERFORMANCE OBJECTIVE: The apprentice will visually check wall surfaces and beads and mouldings for proper preparation for filling and identify all deficiencies.

PROCEDURES	CRITERIA
Identify deficiencies in condition of board.	1. Crumbly edges. 2. Air pockets in core. 3. Face paper should be clean and smooth. 4. Little or no tapered edge. 5. Edge of taper not 90^0. 6. High shoulder on tapered edge.
Identify deficiencies in installation of board.	1. Board should be on tight so that when struck it does not rattle. 2. Fasteners must not be above surface of board. 3. Screws should be 300 mm o.c. Single nails 180 mm o.c. on ceiling, 200 mm on wall; double nails, nails 50 mm apart - 300 mm o.c. 4. Face of board should be showing. 5. Broken pieces of board larger than 150 mm in diameter should be cut to framing member and larger pieces installed. 6. All boards called for in plans should be installed. 7. Maximum gap between boards - 5 mm.

.../Cont'd

SKILL 6: RECOGNIZE PROPERLY PREPARED SURFACES (Cont'd)

PROCEDURES	CRITERIA
Identify deficiencies in plumb and straightness of wall.	1. Walls should be free of waves in surface due to framing members. 2. Walls should be plumb within 6 mm in 2400 mm. 3. No plumbing or electrical pipes in plane of surface of studs.
Identify deficiencies in application of beads and mouldings.	1. Maximum depth of fill should be 6 mm for slowsetting fillers. 2. Beads should be on tight with no waves in flange. 3. Joints in bead should be tight. 4. Joined beads should be in same plane. 5. Finishing edge should be straight. 6. Finishing edge should not be damaged.
Ensure that other trades have finished their work.	1. House must have the following inspection slips posted: - electrical - framing - plumbing - insulation - drywall installation (if required by municipality). 2. On commercial and large residential sites check the following: - rooms have light switches at 1200 mm mark - residential sites have convenience outlets every 2000 mm - all boxes have wires running to them - sinks have 2 copper pipes and 1 plastic drain - cement floors should be finished .../Cont'd.

SKILL 6: RECOGNIZE PROPERLY PREPARED SURFACES (Cont'd)

PROCEDURES	CRITERIA
Ensure that other trades have finished their work. (Cont'd)	- steps should be in place and sturdy - dryer vents should be installed in laundry area - window and door openings are closed or covered.

SKILL 7: COVER AREAS TO BE PROTECTED

PERFORMANCE OBJECTIVE: The apprentice will choose an economical and efficient way to mask an area. The apprentice will apply the masking material, ensuring that no damage to walls results from the method of application, from insufficient fastening which allows drywall finishing material to leak through, or from the removal of the material.

PROCEDURES	CRITERIA
Mask with masking tape.	1. Masking tape should not be used on wet or dusty surfaces. 2. Masking tape should not be applied to paint that is soft or recently applied. 3. Masking tape is used where detail masking is necessary. 4. Masking tape must be removed as soon as work is completed. 5. Masking tape does not have to be pressed tightly in place for the full width of tape. 6. Masking tape should be pulled off so that it does no damage to surface. 7. Masking tape should not be put on paper surface of wallboard. 8. On photo finish panelling masking tape must be applied very lightly.
Mask with masking machine.	1. At least half the width of tape should be available for sticking to surface. 2. Paper should be taped down in corners if airless paint machine is used. 3. Paper should be placed as close to angle as possible. 4. Paper cannot be reused. 5. If paper is used without plastic, windows should be protected.

.../Cont'd

SKILL 7: COVER AREAS TO BE PROTECTED (Cont'd)

PROCEDURES	CRITERIA
Mask with plastic.	1. 0.05 mm plastic is sufficient. 2. If stapled on, staples should be placed 1 m apart and plastic should be folded. 3. If taped, piece of tape should be at least 15 cm long to provide a solid bond. 4. Plastic should be hung so doorways can be passed through. 5. Plastic can be reused.
Protect floors.	1. 0.05 mm plastic is sufficient if it is short time protection. 2. If the area has a lot of traffic, heavy plastic or a tarp should be used. 3. When texturing or spraying paint, plastic on floors should be sealed to walls to prevent overspray.

SKILL 8: SEAL FOR STAINS WHEN NECESSARY

PERFORMANCE OBJECTIVE: The apprentice will choose and apply an appropriate material to seal a stained area. The entire stain must be sealed and the sealer must be allowed to dry completely before applying filler, paint or texture.

PROCEDURES	CRITERIA
Identify rusting and potential rust areas.	1. Rust creates red brown spots on metal. 2. Caused by moisture on uncoated fastener. 3. Screws and concrete nails used to fasten board. May rust with high humidity areas in basements. 4. Metal rebar exposed in concrete ceilings.
Identify stains which will bleed through.	Must identify all of the following: - coffee - tea - blood - red pencil - chalk - ink - felt pen - food.
Choose seal for preventing bleeding through.	1. Concrete seal should be used on concrete. 2. Lacquer or varathane for stains on wallboard.
Apply seal.	1. Entire stain is covered. 2. Sealer is applied in thin layers for faster drying. 3. Sufficient time is allowed for seal to dry before filler paint or texture is applied. 4. Equipment must be cleaned using appropriate solvent.

TRACK 2

JOB INSPECTION

SKILL 9: MAKE MINOR CORRECTIONS AND PRE-FILL

PERFORMANCE OBJECTIVE: The apprentice will fasten loose boards, remove loose materials and pre-fill to prepare a surface for taping.

PROCEDURES	CRITERIA
Fasten loose boards.	1. Criteria for the task "Recognize properly prepared surface" must be met. 2. Nails should be used on wood studs. 3. No fasteners within 6 mm of edge of board. 4. Screws and screw gun should be used on steel studs. 5. Drive in any nails above surface of board with wallboard hammer. 6. Drive in any screws above surface of board with phillips screwdriver.
Remove loose material.	1. All loose paper, insulation, plastic in joints should be removed. 2. Broken board should be cut out.
Pre-fill joints.	1. If taping is to be done within 24 hours, fast set should be used to pre-fill. 2. If a slow setting filler is to be used it must be hard before tapes are applied. 3. Any joints wider than 5 mm should be pre-filled. 4. Uneven joints should be pre-filled to level them.

SKILL 10: PERFORM FINAL INSPECTION

PERFORMANCE OBJECTIVE: The apprentice will examine finished work for completeness and imperfections with a 200 watt bulb, by the feel of hand or by visual inspection. The method of inspection will be determined by the final decoration.

PROCEDURES	CRITERIA
Inspect surface preparation for suitability of reflective paint finish (egg-shell, semi-gloss, high-gloss).	1. Bulb should be held so that light will shine at right angles to surface of filled area. 2. No scratches or ridges should show 0.5 mm tolerance. 3. 150-200 watt bulb used. 4. Wide fills, fills around joined beads or any areas that are questionable should be checked. 5. Beads should be full and blend into wall surface. 6. See criteria for flat finishes.
Inspect for flat paint finishes.	1. Joints, butts can be out 3mm in 1200. 2. Beads must be full up to 30 cm from finishing edge. 3. Paper should not be torn or over sanded. 4. Joints should look straight and parallel. 5. No metal or tape should show through filler. 6. No scratches, ridges (1 mm) or waves. 7. All edges should be feathered and sanded.

.../Cont'd.

SKILL 10: PERFORM FINAL INSPECTION (Cont'd)

PROCEDURES	CRITERIA
Inspect for completion of work.	1. Masking materials should be removed. 2. Any surfaces covered with drywall material should be cleaned. 3. Floors should be scraped and swept. 4. Finishing edge of edge mouldings and beads should be clean. 5. All tapes have been coated.

TRACK 3

SAFETY

SKILL 1: IDENTIFY THE ROLE OF THE WORKERS' COMPENSATION BOARD

PERFORMANCE OBJECTIVE: The apprentice will identify the role of the Workers' Compensation Board, the injury claim procedures and all the regulations that apply to drywall finishers.

PROCEDURES	CRITERIA
Explain role of Workers' Compensation Board.	1. Provides benefits for injured workers. 2. Inspects for safety.
Identify procedures for making claims for injuries.	1. Claims can be made for on-job injuries. 2. Claims can be made for some off-job injuries through criminal injury. 3. Accidents should be reported within 24 hours. 4. Claims must be made within one year.
Identify specific Workers' Compensation Board regulations that apply to drywall finishers.	1. Sections: 2, 4, 6, 12, 13, 14, 19, 20, 30, 32, 35 and 78. Appendices: A, C, K, L. Tables: 2, 4 and 7.

SKILL 2: MAINTAIN STILTS

PERFORMANCE OBJECTIVE: The apprentice will assemble a pair of stilts and perform a safety check on them before using them.

PROCEDURES	CRITERIA
Assemble stilts.	1. Follow instructions supplied by manufacturer. 2. Lock all nuts.
Perform safety check.	1. Check straps, nuts and bolts before each use. 2. Check that rubber foot pads are secure. 3. Grease moving parts on stilts.
Adjust stilts.	1. Springs adjusted until it feels like natural foot action. 2. Foot adaptors set to match foot size. 3. Leg supports adjusted so strap passes just below the knee. 4. Ankle should line up with leg support for centering foot on stilts.

SKILL 3: PREPARE SCAFFOLDS

PERFORMANCE OBJECTIVE: The apprentice will construct a safe scaffolding adhering to W.C.B. regulations, tie loads to a lifting device and move such a system safely.

PROCEDURES	CRITERIA
Identify types of scaffolding.	Must identify all of the following: 1. Rolling tower. 2. Baker type. 3. Temporary stairwell scaffolding.
Identify safe height of work floor for scaffolds.	1. 3 x min. base dimension for safe height. Workers should not remain on scaffold while it is moved. 2. 2 x min. base dimension worker may remain on scaffold while it is moved. 3. 1½ x min. base dimension worker may move scaffold himself and remain on scaffold.
Identify safe construction of framework.	1. No weakened supports due to rust, bends or broken welds. 2. Safety braces are secured in place. 3. Framework is not twisted due to uneven floor. 4. Brakes on all wheels lock. 5. Guardrails must be used on all scaffolds 3 m or more above grade. 6. Top rail of guardrail shall be approximately 1.07 cm above floor level.

.../Cont'd.

SKILL 3: PREPARE SCAFFOLDS (Cont'd)

PROCEDURES	CRITERIA
Identify safe working floor.	1. Minimum of 2 planks for a floor. 2. 38 x 255 mm is minimum plank dimension. 3. No less than 15 cm and no more than 30 cm overhang on planks. 4. Planks should be free of knots or cracks. 5. Toe boards should be 10 cm in height above the work platform and shall not have more than 13 mm gap between their lower edges and the work platform.
Use safe methods of construction.	1. Wooden scaffolds must have minimum 38 x 89 mm supports that are cross braced and securely nailed. 2. Hard hat should be worn when there is a danger of falling objects. 3. Consideration of safety of partner shown throughout construction of scaffold. 4. Scaffold must be built on solid level floor. 5. Scaffold must be built so as not to contact energized electrical wires. 6. Scaffold must be built so that people constructing it are protected from falling.

.../Cont'd.

SKILL 3: PREPARE SCAFFOLDS (Cont'd)

PROCEDURES	CRITERIA
Move scaffolding.	1. Ensure that the scaffolding is safe height for moving. 2. Ensure that all the scaffold wheels are unlocked. 3. Check the floor for any obstructions or holes. 4. Inform the people on the scaffold that it is going to be moved. 5. Be aware of any overhead obstructions. 6. Make sure materials and equipment on work floor are secure.

SKILL 4: WORK ON ELEVATED FLOOR LEVELS

PERFORMANCE OBJECTIVE: Given an elevated floor level to work on, the apprentice will identify and practice safe working habits.

PROCEDURES	CRITERIA
Work on stilts.	Must check for the following: 1. See Criteria for Maintaining Stilts. 2. Floors: - electrical conduit - wet filler - paper - wire - holes - rooks - water - unstable surface - stairs. 3. Ceilings: - height less than 2400 mm - drops and archways - unusual projections - electrical wires. 4. Safety railings at suitable height. 5. Heavy weights are not lifted while on stilts.
Work on scaffold.	1. Maintain communication with other people on work floor. 2. Be in a stable position when scaffold is moved. 3. Keep work floor free of wet filler. 4. Avoid exerting excessive horizontal forces.

.../Cont'd.

SKILL 4: WORK ON ELEVATED FLOOR LEVELS (Cont'd)

PROCEDURES	CRITERIA
Work on scaffold (cont'd).	5. Do not use stilts, sawhorses or ladders, etc. to elevate work floor. 6. Make sure safety railings and toe boards are in place. 7. Use rope and pulley to lift material. 8. Keep floor uncluttered.
Work on ladder.	1. Base of ladder 30 mm away from wall for every 1200 mm vertical. 2. Do not stand on top rung. 3. Work with base of ladder secured. 4. Do what can be easily reached from ladder. 5. Extension ladders should have a 910 mm overlap. 6. Wooden ladders should not be painted. 7. Top and bottom of ladder must be insulated.
Tie knots for lifting material.	1. Must use standard knots. 2. See that knots are secure before lifting. 3. Method of tying will support load safely.

SKILL 5: CLEAN FLOORS

PERFORMANCE OBJECTIVE: The apprentice will clean floors using a floor scraper and a broom and will dispose of the waste safely.

PROCEDURES	CRITERIA
Scrape filler off floor.	1. Stiff blade floor scraper should be used. 2. All lumps should be scraped to leave flat smooth surface. 3. On finished floors water should be used to soften material before removing it. 4. Wet filler should be removed at the time it is dropped.
Sweep floor.	1. Approved mask should be worn. 2. Vacuum cleaner is not acceptable. 3. All loose materials should be removed.
Dispose of waste material.	1. In bins on job site. 2. In garbage chute. 3. Waste containing asbestos must be sealed in plastic bags. 4. In back-fill area (with prior approval).

SKILL 6: TAKE PRECAUTIONS WITH ELECTRICAL EQUIPMENT

PERFORMANCE OBJECTIVE: The apprentice will take appropriate precautions to ground electrical equipment and prevent an electrical shock.

PROCEDURES	CRITERIA
Identify grounded tools.	Must have the following: 1. Plastic bodies or three-prong plugs. 2. Airless paint hoses must have ground wire.
Repair grounded tools.	1. Replace plugs with green wire to ground. 2. Use ground adapter (when no grounded outlet is available). 3. All connections must be tight.
Identify working procedures to prevent electrical shock.	1. Work area should be dry. 2. Proper footwear with no holes should be worn. 3. Drill should never be left standing in a pail of water. 4. Insulate or de-energize bare live wires. 5. Metal ladders must have non-conducting materials at either end. 6. Hard hats should be W.C.B. approved for protection against electrical shock. 7. Electrical cords should not be in contact with water. 8. Wet filler should not contact energized wires when filling.

.../Cont'd

SKILL 6: TAKE PRECAUTIONS WITH ELECTRICAL EQUIPMENT (Cont'd)

PROCEDURES	CRITERIA
Identify faulty equipment.	Must inspect for all of the following: 1. Broken cases. 2. Sticky switches. 3. Missing guards. 4. Frayed electrical cords. 5. Broken ground wires.

SKILL 7: IDENTIFY AND CARE FOR SAFETY EQUIPMENT

PERFORMANCE OBJECTIVE: The apprentice will wear appropriate clothing and safety equipment. Clothing must be kept clean and white. Safety equipment must be maintained or replaced when necessary.

PROCEDURES	CRITERIA
Wear protective clothing.	1. Work clothes should be worn on job and a change of clothes should be had for wearing home. 2. Clothes should be washed regularly to remain white. 3. Dusty clothes should be taken home in container. 4. Hat should be worn while sanding.
Wear safety equipment when appropriate to specific tasks.	1. Approved mask should be worn whenever dust or paint mists are present. 2. Hard hat should be worn on or off jobsite or when people working above. 3. Goggles or glasses worn when sanding overhead. 4. Mask filters should be cleaned when breathing becomes difficult. 5. Mask should be N.I.O.S.H. or M.E.S.A. approved for pneumoconiosis producing dusts. 6. Mask must be sealed to face.

SKILL 8: USE LIFTING TECHNIQUES

PERFORMANCE OBJECTIVE: The apprentice will lift drywall materials safely according to W.C.B. recommended procedures.

PROCEDURES	CRITERIA
Identify safety procedures for lifting.	Must do all the following: 1. Use Palmer Grip. 2. Keep object close to body. 3. Keep back straight. 4. Tuck chin into chest. 5. Lift with legs.
Identify safe conditions for lifting.	1. Good footing. 2. Never lift pails of filler when wearing stilts. 3. Use machine to lift whenever possible. 4. Use rope and pulley for lifting to scaffold.
Identify correct methods of moving filler pails (individually and in pairs).	1. Keep back straight. 2. Carry two pails at a time. 3. Do not completely fill pails. 4. Use a cart when possible. 5. Carry pail of filler with partner.
Carry filler.	1. Bags are best carried on shoulder to reduce strain on back. 2. Carry one box of premix at a time as close to body as possible.

.../Cont'd

SKILL 8: USE LIFTING TECHNIQUES (Cont'd).

PROCEDURES	CRITERIA
Carry wallboard.	1. Sheets longer than 3000 mm should be carried by two people. 2. Should be carried as follows: - both people on same side of sheet with same hand on board - approximately 30 cm from ends if two people carry - board held in center if one person carries - board cradled in hand at bottom of sheet - board leaned against shoulder.

SKILL 9: PERFORM TASKS USING PRINCIPLES OF BIOMECHANICS

PERFORMANCE OBJECTIVE: The apprentice will perform tasks in such a way as to prevent damage to joints and muscles.

PROCEDURES	CRITERIA
Identify precautions to protect muscles.	1. Light form of exercise is necessary as warm up. 2. Start working relaxed then after 5-10 min. exert more effort. 3. Avoid sudden unguarded motions. 4. Avoid stretching with muscles under stress.
Identify precautions to protect shoulder, elbow, wrist and hip joints.	1. Vary movements. 2. Avoid awkward movements. 3. Avoid over-extension of limbs. 4. Use leverage of tools not body.

SKILL 10: ADMINSTER SURVIVAL FIRST AID

PERFORMANCE OBJECTIVE: When injuries occur, the apprentice will identify and use correct survival first aid techniques until proper medical attention arrives.

PROCEDURES	CRITERIA
Check for breathing and perform resuscitation if necessary. Stop arterial, venous and capillary bleeding. Check for consciousness. Place person in drainage position. Get help.	Criteria found in W.C.B. "Survival First Aid" course.

SKILL 11: CLEAN UP AFTER THE JOB

PERFORMANCE OBJECTIVE: The apprentice will clean up personal and company tools and the work area each time a job is finished.

PROCEDURES	CRITERIA
Clean personal tools at end of shift.	1. Hand tools should be washed and stored in dry place each day. 2. Tools should be checked for any damage and filed each day. 3. Filler should not be left on metal tools as oxidation may occur.
Clean company tools at end of shift.	1. Exterior of company tools should be cleaned so as to maintain a like new appearance each day. 2. Filler must be removed from all moving parts. 3. All hoses should be flushed until clean each day.
Clean work area in preparation for painting at end of job.	1. Floors should be scraped and swept. 2. Any filler on windows, brickwork, doorframes, etc. should be removed.
Remove left-over materials.	1. Material moved to next job site or back to company warehouse.

SKILL 12: USE TRADE TERMINOLOGY

PERFORMANCE OBJECTIVE: The apprentice will use the appropriate trade terminology when discussing equipment or job practices to ensure clear communications especially in hazardous situations.

PROCEDURES	CRITERIA
Name standard equipment.	1. Must be able to use each term in drywall finishing glossary correctly (see Appendix).
Describe standard drywall finishing techniques by name.	1. Common terms applied to taping, filling and texturing procedures.
Give clear directions when operating equipment and moving scaffolding.	Must do the following: 1. Speak in clear, loud voice. 2. Use standard phrases or hand signals.

Track 4
Applying Bead

TRACK 4

APPLYING BEAD

SKILL 1: IDENTIFY CORNER BEADS

PERFORMANCE OBJECTIVE: Given a type of corner bead, the apprentice will name the bead and its methods of application.

PROCEDURES	CRITERIA
Identify and name corner beads.	Must identify all of the following: 1. Metal corner bead. 2. Paper corner bead. 3. Screen corner bead. 4. Flexible corner bead. 5. Veneer bead.
Identify and name methods of applying corner beads.	Must identify all of the following: 1. Mechanical means of fastening for metal beads: - nails - screws - clinching - contact glues. 2. Mechanical fastener for veneer bead - staple. 3. Adhesives for paper, screen and flexible beads: - joint filler - taping filler - or all purpose filler.

TRACK 4

APPLYING BEAD

SKILL 2: IDENTIFY EDGE TRIMS

PERFORMANCE OBJECTIVE: Given an edge trim, the apprentice will name the trim and its method of attachment.

PROCEDURES	CRITERIA
Identify and name edge trims.	Must identify all of the following: 1. Metal J-bead. 2. Plastic J-bead. 3. Metal square nose bead. 4. Expansion joint bead. 5. Metal L-bead.
Identify and name methods of applying trims.	1. Must identify the following as compression fit: - metal J-bead - plastic J-bead - metal square nose. 2. Must identify the following as mechanical fasteners for metal L-bead and expansion joint bead: - nails - staples - screws.

TRACK 4

APPLYING BEAD

SKILL 3: SELECT BEADS AND TRIMS

PERFORMANCE OBJECTIVE: Given a job situation, the apprentice will select the correct bead or trim to be used.

PROCEDURES	CRITERIA
Identify when metal bead is to be used.	1. On corners when high speed application is required. 2. When you wish to fill immediately after applying bead.
Identify when the use of veneer bead is preferable.	1. When a corner has to be straightened. 2. When the corner is subject to heavy wear. 3. When you wish to fill immediately after applying bead.
Identify when the use of screen or paper bead is preferable.	1. When a corner is subject to heavy wear, bumps and knocks. 2. When there is no backing. 3. When tolerances are important.
Identify when the use of flexible paper bead is preferable.	1. On internal or external corners greater or less than 90°.
Identify when finishing trims are used.	1. They are used to finish the rough edge of a wallboard. 2. J-beads are used when there is no backing for nails or screws. Note that J-beads are difficult to use where there is more than one sheet of board requiring trim. 3. J-metal square nose is used when filling is not desired. 4. Plastic J-bead requires no filling and is used around windows as a vapour barrier where wallboard is used as a liner.

.../Cont'd

SKILL 3: SELECT BEADS AND TRIMS (Cont'd)

PROCEDURES	CRITERIA
Identify when finishing trims are used. (Cont'd)	5. Expansion bead is used where smooth finish of an expansion joint is required. 6. L-bead is used when there is a backing to the boards and where drywall abuts another finish, e.g., T-bar ceiling or plastic or concrete block wall. It is also used when a straight line must be maintained.

TRACK 4

APPLYING BEAD

SKILL 4: MEASURE AND CUT BEADS AND TRIMS

PERFORMANCE OBJECTIVE: Given a vertical or horizontal corner, or a round or rectangular opening, the apprentice will measure bead to the required tolerance and cut the bead cleanly.

PROCEDURES	CRITERIA
Measure bead and trims.	1. Tape measure used to measure vertical beads to 10 mm of height of corner. 2. Tape measure used to measure horizontal beads to 2 mm of length of corner. 3. Bead for round openings must be exact circumference of opening. 4. Bead may be held up to opening and cut so that bead slides into snug fit in opening. 5. Horizontal beads in rectangular openings cut to 2 mm, vertical beads 1 mm.
Cut bead and trims.	1. Aircraft snips are the accepted cutting tool. 2. End of cut must be clean and not curled up or down for flange and finishing edge. 3. Flange of beads for lineal or right angle interior joints cut at 85° - 90°. 4. Flange and finishing edge of bead for outside mitres cut at 45° - 50° angle. 5. Bead for inside curved opening is cut on flange at right angles. 6. Bead for outside curved opening cut on flange only with allowance for contraction of flange as it is applied.

TRACK 4

APPLYING BEAD

SKILL 5: ATTACH BEADS AND TRIMS TO VERTICAL AND HORIZONTAL CORNERS

PERFORMANCE OBJECTIVE: The apprentice will apply bead to vertical and horizontal corners, securing them tightly with the required fasteners.

PROCEDURES	CRITERIA
Apply beads and trims to vertical or horizontal corners.	1. Flange must be below plane of finishing edge. 2. No warps in flange. 3. Vertical bead or trim applied tight to ceiling. 4. 6 mm maximum at bottom of bead or trim. 5. 1 mm maximum gap at either end of horizontal bead. 6. Finishing edge not damaged. 7. Depth of fill should be maximum 6 mm except for veneer bead. 8. Veneer bead may have maximum fill of 10 mm for straightening or plumbing reasons. 9. Joints in beads or trims must have smooth level finishing edge.
Fasten metal beads and trims with mechanical fasteners.	1. Nails or screws placed 300 - 450 mm o.c. and opposite each other. 2. Fastener heads must be below plane of finishing edge. 3. If clinched, bead clinched every 150 - 200 mm. 4. Clincher teeth must cut and flange buried minimum of 3 mm into wallboard.

.../Cont'd.

SKILL 5: ATTACH BEADS AND TRIMS TO VERTICAL AND HORIZONTAL CORNERS (Cont'd)

PROCEDURES	CRITERIA
Fasten metal beads and trims with mechanical fasteners. (Cont'd.)	5. Staples are used to applied veneer bead at 150 - 200 mm intervals. 6. If glue is used in addition to fasteners, bead must be applied before the glue forms a film on the surface.
Fasten paper, screen and flexible beads with filler.	1. Paper or screen must be bonded securely to metal part of bead. 2. Paper or screen bonded securely to wallboard for entire length. 3. Flexible bead used on corners greater than 90^{o}. 4. Line formed by flexible bead must be straight and plumb or level.
Apply compression fit trims.	1. Metal J-bead applied around closet openings, valences, and inspection holes. 2. Plastic and J-bead applied where wallboard is butted against metal as vapour barrier. 3. Metal square nose used where no filling is required around an opening. 4. Finished edges of bead must be smooth, flat and free of dents. 5. Trim must fit solidly on board. 6. Back edge of bead must not be obstructed by paper, broken wallboard or tear strips. 7. Flange must be below finishing edge of bead.

TRACK 4

APPLYING BEAD

SKILL 6: ATTACH BEADS AND TRIMS AROUND OPENINGS AND OUTSIDE MITRES

PERFORMANCE OBJECTIVE: The apprentice will apply bead to fit an opening and an outside mitre so that the bead requires a maximum fill of 6 mm and the joints are tight.

PROCEDURES	CRITERIA
Apply bead or trim to square openings.	1. Vertical beads or trims should meet to form a continuous finishing edge. 2. Corners should be level. 3. Beads must meet at 90°. 4. See criteria for "Apply vertical and horizontal bead".
Apply bead or trims to round openings.	1. Edge should form smooth unbroken line. 2. Diameter at any point on circle should be within 6 mm of round. 3. No blocked or squared sections on circumference. 4. See criteria for "Apply vertical and horizontal bead".
Apply bead to drop.	1. Drop must have continuous smooth edge in all three planes. 2. Beads must meet solidly at apex of corner. 3. Corners must form 90° angle.

TRACK 4

APPLYING BEAD

SKILL 7: PLUMB AND LEVEL BEADS AND TRIMS

PERFORMANCE OBJECTIVE: The apprentice will plumb and level beads, checking them with a level and straightedge to 6 mm in 2400 mm

PROCEDURES	CRITERIA
Identify methods of leveling or plumbing.	1. Spirit level attached to a 2400 mm metal straightedge. 2. Plumb bob. 3. Chalk line.
Plumb vertical cornerbead.	1. Vertical bead should be out of plumb no more than 6 mm in 2400 mm.
Level horizontal cornerbead.	1. Bead must be level to 3 mm in 2400 mm if building is level. 2. Horizontal bead must be parallel to nearest horizontal edge where building is not dead level. 3. Bead is checked for straightness with a straightedge at apex of finishing edge and on one side.

Track 5
Filling Compounds

TRACK 5

FILLING COMPOUNDS

SKILL 1: SELECT FILLING COMPOUNDS

PERFORMANCE OBJECTIVE: Given a specific job and the conditions under which it will be performed the apprentice will choose an appropriate filler.

PROCEDURES	CRITERIA
Identify characteristics of vinyl filler.	Vinyl fillers: 1. Are made from calcium carbonate. 2. Use P.V.A. as a bonding agent and must dry within 72 h. or binder will decompose. 3. Are easily affected by moisture when dry. 4. Work best in high temp. low humidity conditions. 5. Mix easily. 6. Come in topping, taping and all-purpose compounds.
Identify characteristics of fastset filler.	Fastset fillers: 1. Are made from calcined. 2. Set to harden. 3. Expand rather than shrink. 4. Set in 15 - 90 min. 5. Are excellent for deepfills. 6. Have both mechanical and adhesive bonding.

.../Cont'd.

TRACK 5

FILLING COMPOUNDS

SKILL 1: SELECT FILLING COMPOUNDS (Cont'd)

PROCEDURES	CRITERIA
Identify characteristics of Casein filler.	Casein fillers: 1. Have an organic binder. 2. Rot in pail after 48 h. 3. Are not affected by water when dry. 4. Are taping or topping fillers. 5. Have shrinkage problems.
Identify characteristics of premix fillers.	Premix fillers: 1. Are packaged in 25 kg boxes. 2. Cannot be used until remixed. 3. Have a binder that is affected by freezing temperatures. 4. Have little if any shrinkage. 5. Require little water on the job.
Identify type of filler compound as taping, joint, or all purpose.	1. From label information. 2. Using manufacturer's color code.
Select appropriate type of filler compound for environmental conditions.	1. Casein will withstand cooler temperatures. 2. Hot, dry conditions best for vinyl. 3. Fastset requires same general conditions as vinyl fillers (see Filler Criteria). 4. Fast drying conditions will cause fastset to shrink. 5. Slow drying conditions will cause fastset to become brittle.

.../Cont'd.

SKILL 1: SELECT FILLING COMPOUNDS (Cont'd)

PROCEDURES	CRITERIA
Select appropriate material for taping method.	1. Must be slow set for machine method. 2. Fast or slow set for hopper methods. 3. Fast or slow for hand taping method.
Select appropriate material for filling.	1. Fastsets may be used for first coating. 2. Taping filler compounds may be used for first coating. 3. All purpose may be used for all coats. 4. Topping compounds may be used for second and third coats.

TRACK 5

FILLING COMPOUNDS

SKILL 2: IDENTIFY COMPATIBLE COMPOUNDS

PERFORMANCE OBJECTIVE: Given several compounds, the apprentice will match those which are compatible by comparing their formulation and will visually identify any chemical reactions from incompatible compounds.

PROCEDURES	CRITERIA
Compare composition of filling compounds.	1. According to: - binders used - binder modifiers - proportions of ingredients - filler material.
Identify the observable reactions when incompatible filling compounds are mixed.	1. Filler will be rubbery. 2. Filler will become gritty. 3. Filler will become watery.
Identify compounds which are safe to mix.	1. Fastsets and slowsets may not be mixed together. 2. Materials from different manufacturers may not be mixed together. 3. Taping and topping compounds from the same manufacturer may be mixed if there is no observable reaction. 4. Premix materials may not be mixed with powder materials.

TRACK 5

FILLING COMPOUNDS

SKILL 3: IDENTIFY FILLER PROBLEMS

PERFORMANCE OBJECTIVE: Given the type of filler used and the condition under which it was used the apprentice will classify defects as filler-related or job-condition-related and recommend a solution.

PROCEDURES	CRITERIA
Identify filler related problems.	Must identify the problem as one of the following: 1. Edge cracking. 2. Shrinkage. 3. Fish eyes. 4. Scratches. 5. Air bubbles. 6. Tearing. 7. Poor finish surface. 8. Sandability. 9. Poor feathering. 10. Open time.
Identify job condition related problems.	Must identify the problem as one of the following: 1. Delayed shrinkage. 2. Joint cracking. 3. Air bubbles. 4. Scratches. 5. Reaction between filler and wallboard. 6. Alligatoring.

TRACK 5

FILLING COMPOUNDS

SKILL 4: ESTABLISH MIXING AREA

PERFORMANCE OBJECTIVE: The apprentice will establish and maintain a clean, safe mixing area that is centrally located.

PROCEDURES	CRITERIA
Establish clean mixing area and maintain.	1. Floor covered with scrap wallboard or other material to keep spilled material away from floor. 2. Empty material containers disposed of: - neatly stacked during shift - removed to garbage container at end of shift.
Establish safe mixing area and maintain.	1. Floor dry and free from wet filler. 2. When not in use, drill leaned against wall. 3. Electrical cords placed close to wall and away from traffic areas.
Mix in central safe area.	Mixing area should be: 1. Not near the lunch area. 2. Well ventilated. 3. Located near water, power and center of buiiding if possible. 4. Out of high traffic areas.

TRACK 5

FILLING COMPOUNDS

SKILL 5: MIX FILLER BY HAND OR MACHINE

PERFORMANCE OBJECTIVE: Given any type of filler and a situation in which it is to be used, the apprentice will mix a pail of filler by hand or machine.

PROCEDURES	CRITERIA
Identify the correct consistency for the following fillers:	When a finger is run through the filler the following will happen: 1. Taping by hand or machine: - valley will flow back immediately. - should be slightly thinner for angles. 2. Finishing boxes: - valley will fill but still be evident. - slight resistance when pumped. 3. First coat hand: - valley will fill only slightly. 4. Second coat hand: - valley will fill half full. 5. Polish coat: - filler consistency slightly thicker than taping filler.
Choose mixing apparatus.	1. Drills should not exceed 450 r/min. 2. A "potato masher" can be used for hand mixing. 3. Pre mixed filler may be re-mixed by hand mixer.

.../Cont'd.

SKILL 5: MIX FILLER BY HAND OR MACHINE (Cont'd)

PROCEDURES	CRITERIA
Identify the important points of the mixing technique.	1. Water must be clean, free of chemical impurities. 2. Order of addition of materials: - powdered fillers must be added to water - water must be added to premixed filler. 3. Powdered filler must be left to stand 10 - 15 min. and must be remixed. 4. When remixing filler, do not add water until filler is remixed. 5. Fastset should be mixed and used without waiting. 6. Drill should be moved around in pail so all filler is mixed. 7. Pail of filler should have same consistency from top to bottom. 8. Prolonged mixing of fastset fillers will destroy crystal growth.
Use suitable container.	1. Pail should be free of chemicals, rust, dry paint or filler. 2. Drill must be used with care so that: - pail does not spin - clothes or hair will not be caught - pail is on a level, sturdy surface - drill is not pulled too far out of pail - trigger does not stick - pail does not spin with mixer.

Track 6
Taping

TRACK 6

TAPING

SKILL 1: SELECT APPROPRIATE TAPE

PERFORMANCE OBJECTIVE: Given a job situation, the apprentice will select paper tape or gauze self-adhesive tape for taping.

PROCEDURES	CRITERIA
Identify characteristics and uses of paper tape.	1. Made from cross-fibered Kraft paper. 2. Creased in the middle for angle taping. 3. Spark perforated for keyed surface. 4. Back side of tape is buffed on edges. 5. Bonded to wall with taping compound. 6. Used on all types of joints and walls. 7. Tape must be dry before coating.
Identify characteristics and uses of gauze self-adhesive tape.	1. Fiberglass mesh. 2. Self-adhesive backing requires no taping compound. 3. Recommended for use on non-bearing steel stud walls only. 4. Not suitable for angles. 5. Can be coated immediately after application.

SKILL 2: HAND TAPE (DRY TAPE OR BUTTER METHOD)

PERFORMANCE OBJECTIVE: The apprentice will hand tape flats, butts, small tapes and angles using a pan and knife. Tapes must be centered and straight and be within 10 mm of the total length of the joint.

PROCEDURES	CRITERIA
Identify necessary tools for hand taping.	1. Pan, knife (120 - 150 mm wide), tape reel or wire loop.
Spread mud on flats and butts.	1. 5 mm mud minimum thickness. 2. 60 mm minimum width. 3. Use correct sequence: butts, flats, small tapes and angles.
Spread mud on angles.	1. Both sides as well as corner of angle must have 5 mm mud. 2. Minimum of 30 mm wide on either side of angle.
Lay in tape.	1. Tape should be pressed into mud by hand before being wiped. 2. Angle tapes should be creased before being laid into place. 3. Tape should be laid in before film forms on surface of mud. 4. See Track 9, "Make Drywall Patches."

TRACK 6

TAPING

SKILL 3: APPLY TAPE BY HOPPER METHODS

PERFORMANCE OBJECTIVE: The apprentice will set up a mud hopper or a banjo and apply tapes to all joints. Tapes must be centered and straight and within 10 mm of the total length of the joint.

PROCEDURES	CRITERIA
Identify necessary equipment.	1. Hopper can be of any capacity, with or without adjustable gate. 2. Rubber gloves should be worn to protect hands. 3. 10 L pail used to carry tape. 4. Harness for holding pail with tape.
Set up hopper or banjo.	1. Hopper is secured one of 3 ways: bench mount, wall mount, arch mount. 2. 1 or more rolls loaded onto tape reel. 3. Gate on front should be set so that 5 mm maximum mud on tape. 4. Back gate should be set so that filler does not escape but tape passes through easily. 5. Hopper should be mounted high enough so that tape can be pulled out while wearing stilts. 6. Protect floor in front of hopper from spilled mud.
Apply tape to butts, flats and angles.	1. Tape should have mud along entire length. 2. Tape should be centered over joint. 3. Tapes should be applied in correct sequence: butts, flats, small tapes and angles. 4. Angles should be sharply creased.

SKILL 4: APPLY TAPE BY MACHINE

PERFORMANCE OBJECTIVE: The apprentice will choose and set up a machine taping system to tape butts, flats and angles. Tapes must be centered, straight, and within 10 mm of the total length of the joint.

PROCEDURES	CRITERIA
Given a particular manufacturer's machine taping system, select all the necessary components needed for taping by machine.	1. Ames, Tapeworm, Tornado: - automatic taper - pump - gooseneck. 2. Versa tool: - tube - taping head - material pump - air pump. 3. Corban: - tape gun - back pack - compressor unit.
Prepare taping machine.	1. Tape must be loaded in machine. 2. Drive wheels must move freely. 3. Cutter blade must cut tape cleanly. 4. Creaser wheel must extend fully. 5. Check tape advancing system for tape feed. 6. Check mud-feeding mechanism.

.../Cont'd.

SKILL 4: APPLY TAPE BY MACHINE (Cont'd.)

PROCEDURES	CRITERIA
Tape butts and flats in sequence.	1. Tape should be cut to within 10 mm of length of joint. 2. Centre of tape must be within 10 mm of centre of joint. 3. All tapes must remain in place after application and before being wiped. 4. Sequence: butts, flats, small tapes, then angles. 5. Mud must be present under entire length and width of tape. 6. First 150 - 300 mm of tape run with both wheels on wall, then one only.
Tape angles.	1. Angle tapes are centered on the joint. 2. Tape should be within 10 mm of floor, but tight at ceiling. 3. Tape must be creased with creasing wheel. 4. Mud must be present under entire length and width of tape. 5. Automatic taper is run so that machinery doesn't impede taping process.

TRACK 6

TAPING

SKILL 5: TAPE DEFICIENCIES

PERFORMANCE OBJECTIVE: The apprentice will identify deficiencies in wallboard around light boxes, plugs and pipes that require taping, and will apply tape to provide a solid backing.

PROCEDURES	CRITERIA
Identify deficiencies.	1. Cut or cracked surface paper of board. 2. Broken board where core is not bonded to face paper. 3. Board more than 20 mm from floor. 4. Openings cut for electrical boxes that are more than 3 mm away from metal box. 5. Razor openings that are not tight to box. 6. Openings around pipes that are not tight to pipe. 7. Corners of bead that meet at 90° angles. 8. Loose-fitting valence beads. 9. Inside corners of archways. 10. Broken board around fasteners. 11. Under window sills that are in place before taping.
Apply tape.	1. Tapes should be ripped in center to conform to pipe circumference. 2. Tapes should have mud applied to them before they are applied to the wallboard. 3. Tapes should be put as tight to pipe or box as possible but not overlapping.

.../Cont'd.

SKILL 5: TAPE DEFICIENCIES (Cont'd.)

PROCEDURES	CRITERIA
Apply tape. (Cont'd.)	4. Light switch and outlet screw holes should not be covered. 5. Tapes should be set in place so they will not have to be cut to install cover. 6. Tape should not extend beyond edge of wallboard at openings or edges of bead.

TRACK 6

TAPING

SKILL 6: WIPE FLATS AND BUTT JOINTS

PERFORMANCE OBJECTIVE: Using an appropriate knife, the apprentice will wipe and adjust tapes on butt joints and flats leaving a smooth flat tape that is bonded over its entire length. The bevel on flats should be full, the filler edges feathered and the walls clean. The tape should be within 10 mm of the length of the joint (ie., it should not extend beyond joint).

PROCEDURES	CRITERIA
Choose appropriate knife.	1. Wiping behind machines requires a long handled knife 180 - 200 mm wide. 2. When wiping behind hopper a short handled 150 mm knife can be used. 3. Knife edge should be filed square. 4. Stiff bladed knife works best.
Fill bevel on flat joints.	1. Bevel should be full. 2. Apply mud to fill bevel when necessary.
Wipe tape flat.	1. No ripples. 2. Tape is wiped leaving 5 mm of mud under edge.
Feather edges.	1. Filler should be tapered off so that there is no edge by feel. 2. Feathered edges should be parallel to tape and within 80 mm of center of tape.
Make corrections to tapes.	1. All tapes are appropriate length. 2. Tape should be centered on joints. 3. No lumps under tape. 4. Ripples or folds in tape are removed.
Clean area after wiping.	1. No filler leftover on walls or floor. 2. Discarded tapes disposed of.

TRACK 6
TAPING

SKILL 7: WIPE ANGLES

PERFORMANCE OBJECTIVE: The apprentice will wipe angles to make 90° corners using a pan and knife or a roller and flusher. The tape must be bonded over its entire length. The edges must be feathered and the walls clean.

PROCEDURES	CRITERIA
Identify tools.	1. Pan used to hold mud. 2. 120 mm knife with slightly blunted corners. 3. Roller. 4. 80 mm flusher for wiping.
Wipe by hand.	1. Tape should be square and centered with no rips in angle. 2. Edges should be feathered. 3. No ripples in tape. 4. No excess mud in angle.
Wipe by rollers and flushers.	1. Tape not dragged along angle. 2. Tape centered on angle. 3. Smooth skim coat on tape. 4. Feathered edges. 5. Angle should have no gouges.

TRACK 6

TAPING

SKILL 8: WIPE THREE-WAYS AND BOTTOM ANGLES

PERFORMANCE OBJECTIVE: The apprentice will wipe three-ways and bottoms leaving them smooth, square and tight. Edges must be feathered and the tape must be within 10 mm of the bottom of the angle and tight to the ceiling.

PROCEDURES	CRITERIA
Wipe three-way.	1. Skim coat of filler left on tapes. 2. Edges should be feathered. 3. Tape in junction of angles must be flat. 4. No gouges. 5. No excess filler. 6. No gaps in junction of angle.
Wipe bottom angles.	1. Edges should be feathered. 2. Tape should be flat. 3. No gouges or holes in corner. 4. No excess filler visible. 5. Bottoms of angles should be wiped down to the floor. 6. Tape should have smooth finish.

Track 7
Filling

TRACK 7

FILLING

SKILL 1: FILL FASTENERS

PERFORMANCE OBJECTIVE: The apprentice will fill fasteners using the appropriate filler for each coat and leaving the fastener area flush with the surface of the board.

PROCEDURES	CRITERIA
Choose filler.	1. Use same filler as for bead. 2. Filler for nail spotter slightly thinner.
Fill fasteners by hand or with a nail spotter.	1. Depression is filled level with surrounding surface. 2. Edges are feathered. 3. Surface is smooth. 4. Fastener is completely covered. 5. Maximum finished width of filled nails or screws is 180 mm.

TRACK 7

FILLING

SKILL 2: FILL BEAD

PERFORMANCE OBJECTIVE: The apprentice will fill bead to blend in with the wall surface using a hawk and trowel or pan and knife. The edge must be straight and the bead full.

PROCEDURES	CRITERIA
Fill beads.	1. Depth of more than 6 mm should be filled with fastset, 2nd and 3rd coats should be topping or all-purpose. 2. Three coats of filler should be used. 3. Feathered edge should be parallel to edge of bead. 4. Final coat should be 30 cm wide. 5. No metal should be showing through fill. 6. No waves or scratches should be in surface of fill. 7. No lift offs.
Check for fullness of fill on bead.	1. After one-half hour, 115 mm of filler from feathered edge should be dry. 2. Surface of fill must be full over width and length of fill.
Correct hollow bead.	1. After filler is completely dry. 2. Slowset must be used to refill hollow areas. 3. Must conform to criteria for "fullness".

TRACK 7

FILLING

SKILL 3: FILL BUTTS, HEADERS, FLATS

PERFORMANCE OBJECTIVE: Given a work area, the apprentice will fill butts, headers and flats by hand or machine to a tolerance of 2 mm rise in 1200 mm.

PROCEDURES	CRITERIA
Fill butts, headers and flats by hand or machine.	1. Finished joint must be no more than 2 mm out of level in 1200 mm. 2. 600 - 750 mm wide for butt joints. 3. Edges parallel to each other and to joint. 4. Feathered edges. 5. 300 mm wide fill for flats. 6. 300 - 400 mm wide fill for headers. 7. Finished surface smooth and blemish-free.
Set up flat finisher.	1. Pump should have screen. 2. Box blade should stick up one fingernail thickness above steel skid. 3. Box should be soaked in water to soften any hard material. 4. Brake should be adjusted to personal preference. 5. Condition of blade should be checked for nicks and squareness.
Inspect hand filling tools.	1. Blades should be filed square. 2. Blade has suitable curve for filling. 3. Hand tools are clean and free of any materials that may cause chemical reactions.

SKILL 4: INSPECT FILLING FOR DRYNESS BETWEEN COATS

PERFORMANCE OBJECTIVE: The apprentice will check filler for dryness before coating using a moisturemeter, or by visual inspection and a touch test, and then state whether another coat can be applied.

PROCEDURES	CRITERIA
Use moisturemeter to measure dryness.	1. A wood moisturemeter can be used. Dry filler and wallboard will register between 6% and 12%.
Identify the visual characteristic of dry filler.	1. Filler must be solid in colour. Colour will be determined by pigment used by manufacturer.
Identify the procedures used to touch test filler for dryness.	1. Filler must be dry enough so that when a fingernail is tapped against the filler no impression is left. 2. Should be done in conjunction with visual inspection.

TRACK 7

FILLING

SKILL 5: FILL ANGLES

PERFORMANCE OBJECTIVE: The apprentice will fill angles by hand or machine leaving smooth surfaces and feathered edges. The threeways and bottoms will be square, smooth, clean and have feathered edges. All lines formed by the center of the angles must be straight and either level or plumb.

PROCEDURES	CRITERIA
Select angle tools and material.	1. 100 - 120 mm knife and pan. 2. Cornerbox, flusher and pump. 3. Topping or all purpose filler.
Fill by hand.	1. No build up of mud in angles. 2. No scratches or air bubbles in mud. 3. Smooth feathered finish. 4. Finished surface must be smooth. 5. Lines made by angles must be straight. 6. Corner must not be gouged on either side of angle.
Fill by cornerbox.	1. Mud must be thinner than that used for filling by hand, 2. Angle filled in one complete pass. 3. Edges feathered. 4. No scratches or air bubbles.
Wipe bottoms and threeways.	1. Square and clean. 2. Feathered edges. 3. Smooth. 4. No build up of filler in threeway or at bottom.

SKILL 6: SAND SURFACES

PERFORMANCE OBJECTIVE: The apprentice will sand between coats when necessary and will finish sand using dry or wet sanding methods.

PROCEDURES	CRITERIA
Rough sand.	1. 80 grit sandpaper is used. 2. Pole sander is used. 3. Filler is brushed off not ground off. 4. Ridges removed. 5. Rough sand 100 m^2 in 5 min. 6. Only filler is sanded.
Finish sand.	1. 100 grit for latex flat. 2. 120 grit for semi-gloss. 3. Whole surface and wall must be covered. 4. No ridges, lumps or edges left on wall. 5. No gouges from sandpaper in filler.
Wet sand surfaces.	1. Thin mix of filler must be used. 2. Entire wall surface must be covered. 3. No ridges, bumps or edges are left. 4. Fine grain sponge mounted on a flat surface used for sanding.

Track 8
Texturing

TRACK 8

TEXTURING

SKILL 1: SELECT TEXTURE MATERIALS

PERFORMANCE OBJECTIVE: Given a description of a desired finish as well as the humidity and wear conditions, the apprentice will select the appropriate texture material to achieve the finish.

PROCEDURES	CRITERIA
Identify characteristics of textures.	1. Hard textures: - requires undercoating of surface before application - fine aggregate - will not rub off - does not cover entire surface unless applied by hand - of sprayed on surface, coverage is 50 - 80% - used on walls - limestone based. 2. Soft textures: - requires undercoating of surface before application - medium perlite aggregate - can be rubbed off - covers 80 - 100% of surface - used on ceilings only. 3. Self-priming textures: - little if any acoustic value - large expanded polystyrene aggregate - contains powdered latex paint - can be used in high standard humidity areas - can be easily rubbed off - requires no undercoat before application 4. Acoustic textures: - large aggregate mixed with fibres - true acoustic value - applied to a thickness 5 mm or more .../Cont'd.

SKILL 1: SELECT TEXTURE MATERIALS (Cont'd.)

PROCEDURES	CRITERIA
Identify the best use for each texture.	1. Hard texture (Spantex): - orange peel - knock down finish - walls and ceilings - spattercoat. 2. Hard texture (Kaltex): - used for hard spattercoat - knock down. 3. Soft texture (Roughtex): - low humidity areas - ceilings only. 4. Self-priming texture: - kitchens/bathroom - ceilings only - high humidity areas. 4. Acoustic textures: - high humidity areas - ceiling texture only.
Identify characteristics of a good texture sealer.	1. White in colour. 2. Seals surface and hides joints for even suction. 3. Flat tone. 4. Reasonably fast drying.
Identify the composition and procedures for use of glitter.	1. Various coloured plastic or metallic particles. 2. Applied after ceiling is sprayed and while texture is still wet.

.../Cont'd.

SKILL 1: SELECT TEXTURE MATERIALS (Cont'd.)

PROCEDURES	CRITERIA
Identify samples of sprayed and hand-applied texture finishes.	1. Identify the following with 100% accuracy: sprayed - orange peel self-priming knock-down splatter soft. hand applied - trowelled broom stipple.

SKILL 2: PREPARE SURFACE FOR TEXTURE

PERFORMANCE OBJECTIVE: Given a specific texture finish, the apprentice will prepare a drywall or concrete surface for texture application.

PROCEDURES	CRITERIA
Check surface of renovations.	1. All loose materials removed. 2. Wallpaper removed even if fastened securely. 3. Discoloured areas sealed preferably with PVA sealer. 4. Lumps, large holes or gouges are removed. 5. Painted surface is keyed. 6. Dirty or greasy surfaces washed. 7. Background colour matched to texture colour if desired.
Prepare drywall surface for orange peel, splatter coat, knock-down, and soft textures.	1. Tape all joints and angles. 2. 2 coats of filler on flats, butts and nails. 3. No holes or scratches in finish joints, field of wallboard or angles. 4. Coated with texture undercoat which leaves the surface uniform in colour.
Prepare drywall surface for self-priming textures.	1. Tape all joints and angles. 2. 1 coat of filler on flats, 2 on butts. 3. No liftoffs or gouges. 4. No sealer required.

.../Cont'd.

SKILL 2: PREPARE SURFACE FOR TEXTURE (Cont'd.)

PROCEDURES	CRITERIA
Prepare concrete surface for textures.	1. Concrete seal, trowelled on with single coat depth of 3 mm. 2. Concrete must be free of dust, grease or loose concrete. 3. Joints and honey-combed areas trowelled in first. 4. Entire surface must be covered.

TRACK 8

TEXTURING

SKILL 3: LAY OUT A TEXTURED PATTERN

PERFORMANCE OBJECTIVE: Given a wall or ceiling, the apprentice will lay out a pre-determined pattern using principles of geometry.

PROCEDURES	CRITERIA
Establish reference lines.	1. Main line taken from one wall at 90°. 2. Crossing line is centered and bisects at 90°.
Lay out pattern on wall or ceiling.	1. Measurements taken from reference lines. 2. Circles must be round. 3. Squares have equal sides, equal angles. 4. Diamonds - opposing angles are equal. 5. Pattern must be centered within reference lines. 6. Pattern should match drawings.

SKILL 4: SEAL SURFACE

PERFORMANCE OBJECTIVE: In preparation for a texture, the apprentice will paint a surface with a paint roller and brush or with an airless paint machine. The surface must have uniform colour, and have no runs or streaks. The appropriate safety precautions must be observed.

PROCEDURES	CRITERIA
Seal surfaces with roller and brush.	1. Surface sealed completely. 2. No drips, runs or roller marks. 3. Task is performed without injury to self or others. 4. Ventilation must be provided when toxic fume-producing paints are used.
Use airless paint machine efficiently.	1. Machine must be set up and checked according to manufacturer's direction. 2. Pressure is set at 22 MPa. for latex paints. 3. .4572 mm or .5334 mm tip used for latex paint. 4. Surface must be uniformly coloured. 5. There should be a uniform thickness of paint over entire surface. 6. Proper safety precautions should be followed: - never point gun at any part of anyone's body - lock trigger when gun is unattended - release pressure from pump and gun when not in use - ensure that safety features of machine are serviceable - appropriate mask must be worn - adequate ventilation must be provided. 7. Areas not to be sprayed must be tightly masked.

SKILL 5: MIX COLOURED TEXTURES

PERFORMANCE OBJECTIVE: Given a colour sample, the apprentice will mix texture to match. The coloured texture must be within one shade of the sample when dry.

PROCEDURES	CRITERIA
Identify warm and cold colours.	1. Blues, greens and violets are generally cooler. 2. Reds, yellows and oranges are generally warmer.
Explain the effect of colours.	1. Dark colours close in a space. 2. Light colours expand a space.
Mix colours to match a given sample.	1. Amount of coloured texture required to do an entire job or partitioned section mixed as one batch. 2. Proper base colours used to mix desired colour. See the Drywall Finishing Manual. 3. Colour mixed to within one shade of desired colour.

SKILL 6: APPLY TEXTURE BY MACHINE

PERFORMANCE OBJECTIVE: Given a pattern and a type of texture, the apprentice will apply texture by machine, matching the pattern. The texture must be evenly applied and the appropriate safety precautions taken.

PROCEDURES	CRITERIA
Apply textures by machine.	1. Texture nozzle moved parallel to the surface. 2. The same nozzle to surface angle is maintained. 3. Same nozzle to surface distance maintained. 4. Even coverage is achieved. 5. No buildup in angles, overlaps or corners. 6. Gas-powered equipment properly vented. 7. Electrical equipment connected to sufficiently grounded power supply. 8. Eye, ear and head protection as well as mask worn during application of textures.
Apply texture patterns.	1. Splatter coat: - no crossing of pattern where straight pattern is joined - pattern flows in one direction. 2. Knock-down: - no crumbly appearance - no trowel lines - no discoloration of textures - no smeared or large flat sections.

.../Cont'd.

SKILL 6: APPLY TEXTURE BY MACHINE (Cont'd)

PROCEDURES	CRITERIA
Apply texture patterns. (Cont'd).	3. Orange peel: - entire surface covered with texture material - must resemble surface of an orange peel - no smooth, oversprayed areas. 4. Roughtex: - see general criteria for machine application - 80 - 100% of surface is covered. 5. Self-priming: - wallboard does not show through texture, ie., 100% coverage - aggregate is evenly distributed over entire surface - no smooth or built up areas.

TRACK 8

TEXTURING

SKILL 7: APPLY TEXTURE BY HAND

PERFORMANCE OBJECTIVE: The apprentice will apply texture by hand to produce a stippled, broom, or trowel pattern. The textured surface must be even, be no thicker than 6 mm and be completed within the boundries.

PROCEDURES	CRITERIA
Identify texture tools.	1. Sponge, trowel, knives, broom.
Identify texture patterns.	1. Stippled, broom, or trowelled.
Apply texture.	1. Hard textures only used for hand applications. 2. Pattern is matched, even, and is completed within boundry. 3. Thickness of applied texture no more than 6 mm. 4. No trowel lines or discolouration of texture. 5. No cracks in finished product as a result of the drying process.

Track 9
Making Repairs and Corrections

TRACK 9

MAKING REPAIRS AND CORRECTIONS

SKILL 1: MAKE ON-THE-SPOT CORRECTIONS TO IMPERFECTIONS

PERFORMANCE OBJECTIVE: While working, the apprentice will recognize and repair imperfections in fasteners, filled joints and beads.

PROCEDURES	CRITERIA
Make corrections to tapes.	1. Ripples and air bubbles cut out and reglued. 2. Edge cracked tapes removed and joint re-taped.
Make corrections to fasteners.	1. Loose paper cut out and taped. 2. Paper from removing fastener glued into place. 3. Fasteners that are sticking out set in place or removed.
Make corrections to filled joints.	1. Edges, ridges, scratches and air bubbles filled before filler dries. 2. Tapes covered. 3. Joints widened where necessary to flatten joint.
Make corrections to beads.	1. Loose flanges tightened with mechanical fasteners or glue. 2. Corners less than 3 mm off level are floated. 3. Corners more than 3 mm level are replaced. 4. All metal covered with filler.

SKILL 2: MAKE DRYWALL PATCHES

PERFORMANCE OBJECTIVE: The apprentice will patch a hole in a drywall surface using wallboard mechanical fasteners, tape and filler so that the patched area blends into the surrounding surface.

PROCEDURES	CRITERIA
Patch holes more than 150 mm in diameter using wallboard and mechanical fasteners.	1. Wood or metal backing used. 2. Set screws or nails below surface level. 3. Board type and thickness should match existing wall. 4. Fill to 2 mm tolerance in 1200 mm.
Glue in a wallboard patch less than 150 mm in diameter.	1. Overhanging paper bonded securely to surface. 2. Paper wiped tightly into place. 3. Fill to 2 mm tolerance in 1200 mm.
Patch hole up to 80 mm in diameter using tape.	1. Tape must overlap hole by at least 40 mm on all sides. 2. Tape must provide solid surface over hole. 3. Edges of tape over hole laminated together. 4. Fill to 2 mm tolerance in 1200 mm.

SKILL 3: KEY SURFACES

PERFORMANCE OBJECTIVE: Where necessary, the apprentice will prepare by mechanical or chemical means a bonding surface for filler to adhere to. The surface must be deglazed and free of dust, grease or oil. Tapes must bond securely when dry.

PROCEDURES	CRITERIA
Mechanically key surface.	1. Surface is free of dust. 2. Surface must be deglazed by sanding or cutting. 3. Face of wallboard must not be damaged.
Chemically key surface.	1. Surface is deglazed using TSP. 2. Surface is freed of grease, dust and oil using household cleaner. 3. Gasoline or varsol should not be used. 4. Surfaces chemically treated must be flushed with clean water to remove any cleaner residue.
All surfaces must be properly keyed before repairs are done.	1. Tapes over keyed surfaces must not bubble or edge crack when coated with filler. 2. Filler over keyed surfaces must not lift from surface when sanded or painted.

SKILL 4: MAKE REPAIRS TO FINISHED DRYWALL SURFACES

PERFORMANCE OBJECTIVE: The apprentice will make repairs to joints, fasteners or painted walls after keying the surface and removing loose materials. The repair must be smooth and not be visible after the final finish has been applied.

PROCEDURES	CRITERIA
Fill hollow nails, joints and beads.	1. Surface has been keyed. 2. Tape and fill to a tolerance of 2 mm in 1200 mm. 3. Smooth surface must be produced.
Repair nail pops.	1. Nail is set below surface of board. 2. Another fastener driven in to secure board. 3. Any loose paint or filler is removed. 4. Depression is filled to a smooth finished surface.
Repair ridged joints.	1. Determine cause of ridging as one of following: Moisture: - tape not bonded to wallboard - nail pops in conjunction with ridge. Settlement of building: - tape firmly bonded - evidence of stress cracks - wallboards tightly joined. Defective wallboard: - tape bonded securely to wallboard - wallboard not joined excessively tight - no evidence of stress cracks - core of wallboard powdery at edge of board.

.../Cont'd.

SKILL 4: MAKE REPAIRS TO FINISHED DRYWALL SURFACES (Cont'd.)

PROCEDURES	CRITERIA
Repair ridged joints (cont'd.)	2. Repairs must be carried out as follows: Moisture related ridging: - tape is removed - loose filler is removed - moisture content checked for accepted level - joint is retaped and filled Settlement of building and defective wallboard and related ridging: - ridge is cut out to form a V-shaped groove - joint pre-filled with fast setting material - joint is retaped and refilled - in extreme settlement conditions install expansion joint
Repair cracked joints,	1. Determine cause of crack as one of following: - bonding: fine line crack - building settlement: jagged crack - general abuse: evidence of joint being struck or otherwise damaged - untaped joint: fine line crack 2. Repairs must be carried out as follows: - bonding crack: remove tape, retape and fill - building settlement crack: the building must be at least a year old before effective repairs can be done - tape and prefill the joint - untaped joint: remove any soft or loose material, refasten or replace damaged material - tape and refill - general abuse: tape and refill

.../Cont'd.

SKILL 4: MAKE REPAIRS TO FINISHED DRYWALL SURFACES (Cont'd)

PROCEDURES	CRITERIA
Repair overfilled or humped joints.	1. Fill on either side of center of joint. 2. Center of joint must not be covered with filler.
Repair cracked beads.	1. Determine cause of crack as one of following: - settlement of building: jagged crack - poorly fastened bead: fine line - general abuse: evidence of bead being struck. 2. Repairs must be carried out as follows: - building settlement cracked bead: remove loose material to form V-shaped groove, prefill with fast-setting material, and tape and refill - poorly fastened bead: refasten bead above and below crack, refasten in middle of crack, and refill - general abuse: replace damaged bead or a portion of it, remove filler to form sloping stop (not a sudden one) and refill.

SKILL 5: MAKE REPAIRS TO FINISHED PLASTER SURFACES

PERFORMANCE OBJECTIVE: The apprentice will first choose a method for keying surfaces and an appropriate material for patching a plaster wall, and then make the repairs so that the patches blend into the rest of the surface.

PROCEDURES	CRITERIA
Choose material.	1. Fast set if plaster is exposed. 2. Slow set, if plaster is not exposed. 3. Drywall tape for cracks.
Patch plaster.	1. Surfaces are properly keyed. 2. Loose materials are removed. 3. Cracks are taped completely. 4. Holes filled with fast set, skimmed with slow set before painting. 5. All filling to meet criteria in Track 7.

TRACK 9

MAKING REPAIRS AND CORRECTIONS

SKILL 6: REPAIR DAMAGED TEXTURES

PERFORMANCE OBJECTIVE: Given a damaged texture, the apprentice will repair the texture to match the surrounding area.

PROCEDURES	CRITERIA
Identify texture patching tools.	1. Method of patching must be same or similar to original application method. 2. Air powered texture guns. 3. Hand operated texture guns: - ceiling hopper - wall touch up stick.
Repair abrasion damage.	1. Edges of abrasion must be feathered. 2. Color must match existing colour. 3. Same texture as original must be used.
Repair fire damage.	1. Seal surface with P.V.A. sealer. 2. Texture undercoat applied over P.V.A. Sealer before texturing.
Repair stained surfaces or photographed joints.	1. Seal with lacquer prior to painting or spray varethane prior to repainting. 2. Entire surface re-painted.

Track 10
Maintaining Equipment

TRACK 10

MAINTAINING EQUIPMENT

SKILL 1: MAINTAIN PERSONAL HAND TOOLS

PERFORMANCE OBJECTIVE: The apprentice will maintain a personal set of tools that is complete and is with the apprentice at all times while on the job.

PROCEDURES	CRITERIA
Identify personal hand tools, necessary for each year of apprenticeship.	First Year: 1. Pole sander. 2. Hand sander. 3. Stilts. 4. Phillips and flat screw driver. 5. 150 mm short handle knives. 6. 180 mm long handle knife. 7. 250 mm and 300 mm knives or trowels. 8. Hawk. 9. Pan. 10. Mask. 11. Clothes (white). 12. Utility knife. 13. Scrub brush. 14. Aircraft snips. Second Year: All of the above plus: 1. Nailing pouch. 2. Hatchet. 3. Tape measure 5 m. 4. Key hole saw. Third Year: All of the above. .../Cont'd.

SKILL 1: MAINTAIN PERSONAL HAND TOOLS (Cont'd.)

PROCEDURES	CRITERIA
Store hand tools.	1. All tools must be stored either in a tool box or in a job site lock up.
Maintain hand tools.	1. Blades of trowels should be square. 2. Blades of trowels should have either a slight curve away from wall at center or be straight. 3. Blades of trowels or knives should be filed to a square cutting edge. 4. Utility knife should be sharp. 5. Sandpaper clamps on sanders should hold one piece of paper tightly. 6. Trowel handles should be tight. 7. Aircraft snips should be sharp. 8. Aircraft snips should intersect the full length of blade. 9. Blades should move freely and return to open position when released. 10. Blades should contact snugly.

TRACK 10

MAINTAINING EQUIPMENT

SKILL 2: MAINTAIN TAPING AND FILLING MACHINES

PERFORMANCE OBJECTIVE: The apprentice will clean, oil and replace any worn or broken parts of a taping or filling machine on the job.

PROCEDURES	CRITERIA
Identify taping machine parts that can be replaced on the job.	1. Cutter blade and chain. 2. Cable. 3. Drive chain. 4. Filler valve.
Identify parts to be maintained.	1. Wheels can be cleaned and oiled. 2. Blades must be adjusted before each use.
Replace parts on taping and filling machines.	1. According to manufacturer's specifications. 2. Replaced part functions properly. 3. Down time is kept to a minimum.

TRACK 10

MAINTAINING EQUIPMENT

SKILL 3: PERFORM PREVENTIVE MAINTENANCE ON TEXTURE AND MASKING EQUIPMENT.

PERFORMANCE OBJECTIVE: In preparation for the next shift, the apprentice will wash the lines and the exterior of the texture machine, and will check oil levels for the motor and gear cases.

PROCEDURES	CRITERIA
Maintain motors.	1. Spark plug gap set to manufacturer's specifications. 2. Oil level is correct. 3. Mix oil and gas for 2-cycle engines to proportions recommended by manufacturer. 4. Belt tension is correct.
Check transmission.	1. Oil level is correct.
Grease machine.	1. Grease points were located and lubricated.
Connect and disconnect material hose.	1. Pipewrench, pliers, hammers were used to remove. 2. Hose does not leak when replaced.
Wash equipment.	1. Lines flushed out with water. 2. Outside of machine cleaned. 3. Wand cleaned with brush.
Maintain masking machine.	1. All nuts and bolts are tight. 2. Tape reel aligned with paper.
Maintain and repair stapler.	1. Dismantle and clean parts by wiping. 2. Lubricate hammer assembly. 3. Tighten bolts. 4. Replace staples.

TRACK 10

MAINTAINING EQUIPMENT

SKILL 4: PERFORM PREVENTIVE MAINTENANCE ON AIRLESS PAINT EQUIPMENT

PERFORMANCE OBJECTIVE: Given an airless paint machine, the apprentice will wash lines, filters, and the exterior of the machine, and will remove and replace worn parts.

PROCEDURES	CRITERIA
Wash up airless paint equipment.	1. Lines must be flushed thoroughly with solvent if oil base, water if latex paint used. 2. Solvent should be left in pump. 3. Filters should be clean. 4. Exterior of machine should be washed down.
Identify parts replaceable on the job.	1. Drive belts. 2. Spray tips. 3. Pump diaphragm and check valves. 4. Filters.
Replace parts.	1. According to manufacturer's specifications. 2. Replaced parts function properly. 3. Down time is kept to a minimum.
Identify regular maintenance check points.	1. Drive belt tension. 2. Oil levels. 3. Filters. 4. Hoses and connections.

Track 11
Job Economics

TRACK II

JOB ECONOMICS

SKILL 1: ORGANIZE EQUIPMENT

PERFORMANCE OBJECTIVE: The apprentice will organize all the equipment needed for a job and will put it in a central area, ready for use.

PROCEDURES	CRITERIA
Organize equipment.	1. All equipment required for job located in central area. 2. Equipment is located away from high traffic areas. 3. Equipment is in good repair and ready to use. 4. All equipment required is available at the start of job.

SKILL 2: ORGANIZE A SYSTEM FOR WORKING

PERFORMANCE OBJECTIVE: Given a work crew, the apprentice will organize a system in which all of the crew are working.

PROCEDURES	CRITERIA
Organize a work crew.	1. Ensure everyone in group is busy. 2. Each person is assigned task. 3. Task clearly explained. 4. Assigned work is done. 5. Group leader helps individuals or brings problems to instructor. 6. Instructions are given clearly. 7. Organizes and leads clean up.
Work within a crew.	1. Identify foreman or "charge hand" on site. 2. Identify office phone number and name of contact person.
Compare actual working time for specific tasks with average times for journeyman.	1. First year within 150% of journeyman. 2. Second year within 125% of journeyman. 3. Third year within 110% of journeyman.
Give clear directions.	1. Speak in clear, loud voice. 2. Use standard terms. 3. Use performance based instructions in giving directions: - state desired performance - state desired standard of performance - state conditions under which task is to be performed.

SKILL 3: IDENTIFY COST-EFFICIENT USE OF MATERIALS

PERFORMANCE OBJECTIVE: The apprentice will use units, lengths and types of materials that will minimize cost.

PROCEDURES	CRITERIA
Identify ways of minimizing waste.	1. Short pieces of bead were used where possible. 2. Only the amount of filler required was mixed. 3. Broken bags or boxes of filler used first. 4. Pails of filler properly cleaned and covered for next day's use.
Identify company material order policy.	1. Where to purchase. 2. P.O. numbers. 3. Quantities. 4. Return of goods. 5. Shipping arrangements. 6. Bills of lading.

Province of
British Columbia

DRYWALL FINISHING
SKILL PROFILE CHART

Developed by:

Program Research and Development
POST SECONDARY DIVISION
Ministry of Education
First Edition, 1981

ESTIMATING	INTERPRET PLOT PLAN DRAWINGS	INTERPRET PLAN DRAWINGS	INTERPRET ELEVATION DRAWINGS	INTERPRET DETAIL AND SECTION DRAWINGS	INTERPRET FINISH SCHEDULE	INTERPRET ARCHITECT'S SPECIFICATIONS	CALCULATE MATERIALS					
JOB INSPECTION	DETERMINE FINISH REQUIREMENTS	DETERMINE EQUIPMENT REQUIRED	STORE MATERIAL	CHECK TEMPERATURE AND HUMIDITY	CREATE PROPER DRYING CONDITIONS	RECOGNIZE PROPERLY PREPARED SURFACES	COVER AREAS TO BE PROTECTED	SEAL FOR STAINS WHEN NECESSARY	MAKE MINOR CORRECTIONS AND PRE-FILL	PERFORM FINAL INSPECTION		
SAFETY	IDENTIFY THE ROLE OF THE WORKERS' COMPENSATION BOARD	MAINTAIN STILTS	PREPARE SCAFFOLDS	WORK ON ELEVATED FLOOR LEVELS	CLEAN FLOORS	TAKE PRECAUTIONS WITH ELECTRICAL EQUIPMENT	IDENTIFY AND CARE FOR SAFETY EQUIPMENT	USE LIFTING TECHNIQUES	PERFORM TASKS USING PRINCIPLES OF BIOMECHANICS	ADMINISTER SURVIVAL FIRST AID	CLEAN UP AFTER THE JOB	USE TRADE TERMINOLOGY
APPLYING BEAD	IDENTIFY CORNER BEADS	IDENTIFY EDGE TRIMS	SELECT BEADS AND TRIMS	MEASURE AND CUT BEADS AND TRIMS	ATTACH BEADS AND TRIMS TO VERTICAL AND HORIZONTAL CORNERS	ATTACH BEADS AND TRIMS AROUND OPENINGS AND OUTSIDE MITRES	PLUMB AND LEVEL BEADS AND TRIMS					
FILLING COMPOUNDS	SELECT FILLING COMPOUNDS	IDENTIFY COMPATIBLE COMPOUNDS	IDENTIFY FILLER PROBLEMS	ESTABLISH MIXING AREA	MIX FILLER BY HAND OR MACHINE							
TAPING	SELECT APPROPRIATE TAPE	HAND TAPE (DRY TAPE OR BUTTER METHOD)	APPLY TAPE BY HOPPER METHODS	APPLY TAPE BY MACHINE	TAPE DEFICIENCIES	WIPE FLATS AND BUTT JOINTS	WIPE ANGLES	WIPE THREE-WAYS AND BOTTOM ANGLES				
FILLING	FILL FASTENERS	FILL BEAD	FILL BUTTS, HEADERS, FLATS	INSPECT FILLING FOR DRYNESS BETWEEN COATS	FILL ANGLES	SAND SURFACES						
TEXTURING	SELECT TEXTURE MATERIALS	PREPARE SURFACE FOR TEXTURE	LAY OUT A TEXTURED PATTERN	SEAL SURFACE	MIX COLORED TEXTURES	APPLY TEXTURE BY MACHINE	APPLY TEXTURE BY HAND					
MAKING REPAIRS AND CORRECTIONS	MAKE ON-THE-SPOT CORRECTIONS TO IMPERFECTIONS	MAKE DRYWALL PATCHES	KEY SURFACES	MAKE REPAIRS TO FINISHED DRYWALL SURFACES	MAKE REPAIRS TO FINISHED PLASTER SURFACES	REPAIR DAMAGED TEXTURES						
MAINTAINING EQUIPMENT	MAINTAIN PERSONAL HAND TOOLS	MAINTAIN TAPING AND FILLING MACHINES	PERFORM PREVENTIVE MAINTENANCE ON TEXTURE AND MASKING EQUIPMENT	PERFORM PREVENTIVE MAINTENANCE ON AIRLESS PAINT EQUIPMENT								
JOB ECONOMICS	ORGANIZE EQUIPMENT	ORGANIZE A SYSTEM FOR WORKING	IDENTIFY COST-EFFICIENT USE OF MATERIALS									

THE DACUM APPROACH

DACUM is a systematic model of program development used in designing career, technical and vocational training programs. The first step in the process is to establish the skills expected of a graduate entering employment. These skills are generally specified by a representative employer group in a workshop conducted by program development specialists. The product of this activity is a skill profile chart. This chart is then circulated both to the participants and to a number of other employers for review prior to further development.

The next step is to specify learner-centred performance objectives. These include not only the skills a learner must demonstrate but also the conditions under which the skill is to be performed and the criteria used to determine the acceptable standard of performance.

Once the performance objectives have been set, there are three important steps to complete the development process. These are generally undertaken by an instructor or group of instructors, in the following order:

1) Appropriate evaluation instruments are chosen or created to assess student capability in relation to the specific objectives of the program.

2) A variety of suitable instructional techniques and learning experiences are chosen to facilitate learning of the skills and knowledge required to meet the objectives.

3) Instructional resources (texts, films, models, and other learning aids) are selected or created.

READING THE SKILL PROFILE CHART

A skill profile chart (often referred to as a DACUM Chart), is a graphic representation of the essential skills expected of a student graduating from a specific career, vocational or technical program.

Broad areas of employee responsibility are shown in the boxes on the left of the chart. These are called "general areas of competence". The tasks or skills related to each are sequenced along the horizontal track to the right of the general area of competence.

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